

NOTES ON A THIRD COLLECTION OF BIRDS MADE IN KAUAI,
HAWAIIAN ISLANDS, BY VALDEMAR KNUDSEN.

BY

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A new collection of birds just received from Mr. Valdemar Knudsen in Kauai, Hawaiian Islands, is in many respects as interesting as any of those previously sent, and deserves more than a passing notice.

***Puffinus cuneatus* SALVIN.**

Knudsen's Shearwater.

Nau Kane.

1888.—*Puffinus cuneatus* SALVIN, *Ibis*, 1888 (July 1), p. 353.

1888.—*Puffinus knudseni* STEJNEGER, *Proc. U. S. Nat. Mus.*, XI, 1888 (Nov. 8.), p. 93.

The additional four specimens received from Mr. Knudsen do away with those differences which I imagined to exist between the Hawaiian Islands bird and the description of Salvin's *P. cuneatus* published only a few months before my own, and as the name given by him consequently has the priority, *P. knudseni* becomes a synonym of the former.

Three of these specimens (Nos. 116764–116766) agree closely with the type, except that the sides of throat and neck are distinctly mottled with grayish.

The fourth specimen (No. 116767), although agreeing with the others in dimensions and coloration above, differs considerably in having the whole under surface, including under wing-coverts, of a uniform brownish slate gray (very much like Ridgway's "mouse gray," *Nom. Col.*, pl. II, fig. 11), only slightly paler on middle of chin and throat, and somewhat darker on flanks and under tail-coverts.

Coming, as it does, from the same locality, and agreeing with the others minutely in every other respect, I feel but little hesitation in pronouncing this uniformly colored specimen the dark "phase" of the typical bird with the white under side. In fact the two birds seem to bear the same relations to each other as the dark and the light specimens of *P. sphenurus* figured by Gould. He takes the latter to be the young bird, but there seems to be no good reason for believing that the difference is one attributable to age.

Measurements.

U. S. Nat. Mus. No.	Collector.	Locality.	Wing.	Tail-feathers.	Exp. culmen.	Tarsus.	Middle toe.	Graduation of tail.	Remarks.
116764	Knudsen . . .	Kauai, Hawaiian Islands.	290	149	39	46	54	58	.....
116765	.....do.....	.....do.....	295	145	37	47	55	55	.....
116766	.....do.....	.....do.....	285	137	40	47	54	50	.....
116767	.....do.....	.....do.....	294	142	40	46	57	59	.....
13445	.....do.....	.....do.....	287	138	37	46	54	49	Type of <i>P. knudseni</i> .

Bulweria bulweri (JARD. & SELB.).

Bulwer's Petrel.

I have but little doubt that the two birds received from Mr. Knudsen since the rest of this paper was submitted to the printer really belong to this species. They make a very unexpected addition to the Hawaiian fauna.

As far as coloration is concerned they agree minutely with *B. bulweri*, the greater wing-coverts being lighter than the rest of the wing, in this respect differing from the original description,* and, so far as I know, the only one, of *B. macgillivrayi*. Nor are the bills larger; on the contrary, they are somewhat slenderer; nor do the dimensions or proportions differ, as the appended measurements show. The only doubt is caused by the difference in shape of the nasal tube, which in the single specimen of undoubted *B. bulweri* at my command is swollen almost to the base, while in Knudsen's two specimens it is compressed from about the middle backwards. This difference may be entirely unessential, however.

The occurrence at the Hawaiian Islands of this species, which has hitherto been recorded only from the Eastern Atlantic, and as occasionally occurring in Greenland and the Bermudas, is very interesting, especially as we might have expected to find *B. macgillivrayi* there, and raises the question whether the latter, of which I think only one specimen is known, may not simply be an abnormal individual of *B. bulweri*.

Measurements.

U. S. Nat. Mus. No.	Collector.	Sex and age.	Locality.	Wing.	Tail-feathers.	Exp. culmen.	Tarsus.	Middle toe, with claw.	Graduation of tail.
116945	Knudsen . . .	Ad.	Kauai, Hawaiian Islands	199	110	21	27	30	47
116946	.....do.....	Ad.	.....do.....	196	113	21	28	28	42
32519	Webb	Ad.	Canary Islands	199	109	22	25	28	43

* "Like *T. Bulweri*, but with the bill rather larger; and it is without the sooty-brown on the wings," GRAY, Cat Birds, Trop. Isl. Pac. Oc., p. 56 (1859). This diagnosis, with slight additions and measurements, is reproduced in Finsch & Hartlaub, Beitr. Fauna, Central Polynes., p. 242 (1867).

Sterna lunata PEALE.

Peale's Tern.

Pakalakala.

Four specimens of this comparatively rare species, which is here attributed to the Hawaiian Islands for the first time. I have carefully compared them with Peale's type of the species and with a good series of *S. anathetus* and can vouch for the accuracy of the identification. It is closely allied to the latter species, but is easily distinguished by its much grayer mantle, this being in *S. lunata* of a shade corresponding to Ridgway's "Gray No. 6," while in *S. anathetus* it is brownish slate. The bill of *S. lunata* also averages considerably longer.

This raises the question as to the *S. anathetus* reported from the Hawaiian Islands (DOLE'S *S. panaya* ex HARTL. & FINSCH). So far as I can see this record rests solely upon the identification of Bloxham's *S. oahuensis* being the same as *S. anathetus*. Bloxham's description, however, is that of a young bird, and is clearly referable to *S. fuliginosa* and not to *S. anathetus*, as indicated by the following sentences: "Head, neck, and breast, black; * * * belly, and under the wings, dusky white;" while in the young *S. anathetus* the whole under parts are light, this making the chief color distinction of this bird as compared with *S. fuliginosa*, the young of which is colored exactly as described by Bloxham.

Measurements.

U. S. Nat. Mus. No.	Collector and No.	Age.	Locality.	Wing.	Tail-feathers.	Exp. culmen.	Tarsus.	Middle toe, with claw.	Remarks.
116759	Knudsen ..	Ad.	Kauai, Hawaiian Islands...	275	172	45	20	27	.....
116760	.. do	Ad.	.....do.....	276	180	43	.....	.....	.....
116761	.. do	Ad.	.....do.....	272	168	44	.....	.....	.....
116762	.. do	Ad.	.....do.....	265	167	41	.....	.....	.....
15744	Peale, 725...	Ad.	Vincennes Island	255	150	40	.....	.....	Type

Sterna fuliginosa GMEL.

Sooty Tern.

Ewaewa.

1788.—*Sterna fuliginosa* GMELIN, S. N., I, p. 605.1826.—*Sterna oahuensis* BLOXHAM, Voy. Blonde, App., p. 251.1869.—*Sterna panaya* DOLE, Proc. Boston Ac. (nec Auct.); *Id.*, Haw. Alm., 1879, p. 56.

These quotations only refer to the Hawaiian fauna, and are not intended for a complete synonymy. They are explained under the foregoing species.

The occurrence of *S. fuliginosa* in the Hawaiian Archipelago does not rest on the identification of Bloxham's *S. oahuensis* alone, for in Mr. Knudsen's collection there is an adult bird of this species, which can not be very rare on the islands, as Mr. Knudsen seems well acquainted with it, for he says that "the Ewaewa is very much like the Pakalakala, but is always black on the back."

Measurements.

U. S. Nat. Mus. No.	Collector.	Age.	Locality.	Wing.	Tail-feathers.	Exp. culmen.	Tarsus.	Middle toe, with claws.
116763	Knudsen ...	Ad.	Kauai, Hawaiian Islands	280	170	45	23	27

Gallinula galeata sandvicensis (STREETS).

Hawaiian Gallinule.

Alai ula.

The tarsus of these birds are decidedly red. In every respect they bear out the remarks which I have made on a previous occasion (Proc. U. S. Nat. Mus., 1887, pp. 78-80).

Measurements.

U. S. Nat. Mus. No.	Collector.	Age.	Locality.	Wing.	Tail-feathers.	Culmen, incl. shield.
116778	Knudsen ...	Ad.	Kauai, Hawaiian Islands	179	73	50
116779	...do	Ad.	...do	165	67	46

Charadrius dominicus fulvus (GMEL.).

Pacific Golden Plover.

Kolea.

Two in winter plumage and one (No. 116768) with the lower surface black. The yellow of the upper parts is very rich, and with the measurements given below corroborate the correctness of the previous identification of the Plover visiting the Hawaiian Islands.

Measurements.

U. S. Nat. Mus. No.	Collector.	Age.	Locality.	Wing.	Tail-feathers.	Exp. culmen.
116768	Knudsen ...	Ad.	Kauai, Hawaiian Islands	164	63	25
116769	...do	Ad.	...do	163	64	24
116770	...do	Ad.	...do	167	62	25

Arenaria interpres (LINN.).

Turnstone.

Akekeke.

Two specimens.

Himantopus knudseni STEJN.

Knudsen's Stilt.

Aeo.

The black mesial stripe on the rump and the broad black tips to the tail-feathers are well developed in both examples sent. No. 116777 has the entire fore neck mottled with black all across. The dimensions agree well with those of previous specimens, though the wing is rather longer and the tail shorter. The bill, however, is fully up to the standard, but No. 116776 has a remarkably short tarsus. The characters of the new species are thus pretty well established.

Measurements.

U. S. Nat. Mus. No.	Collector.	Sex and age.	Locality.	Wing.	Tail-feathers.	Exp. culmen.	Tarsus.	Middle toe, with claws.
116776	Knudsen ...	♀ ad.	Kauai, Hawaiian Islands	233	77	75	104	43
116777	...do	♀ ad.	...do	232	79	77	112	44

Heteractitis incanus (GMEL.).

Wandering Tattler.

Ulili.

Three specimens, two of which (Nos. 116773, 116774) with the whole under surface barred. Bill grooved for two-thirds of its length.

Measurements.

U. S. Nat. Mus. No.	Collector.	Age.	Locality.	Wing.	Tail-feathers.	Exp. culmen.	Nasal groove.	Middle toe, with claw.
116773	Knudsen ...	Ad.	Kauai, Hawaiian Islands	167	72	41	26	.....
116774	...do	Ad.	...do	172	79	41	29	.....
116775	...do .....	.....	...do	163	69	39	27	.....

Nycticorax nycticorax nævius (GMEL.).

Black-crowned Night Heron.

Auku kohili.

Adult and young confirming previous identification.

Measurements.

U. S. Nat. Mus. No.	Collector.	Age.	Locality.	Wing.	Tail-feathers.
116780	Knudsen ...	Ad.	Kauai, Hawaiian Islands	310	115
116781	...do	Jun.	...do	295	110

Sula piscator (LINN.).

Red-footed Booby.

A.

One specimen, adding a new species to the Hawaiian list. Bill and feet red.

"The other day, when the men were out fishing, this bird came up to the canoe and tried to take the fish off their hooks." (Knudsen *in litt.*).

Phaëthon rubricauda BODD.

Red-tailed Tropic Bird.

Ula.

Four specimens of this species, which has already been noted by S. B. Dole as common.

Chasiempis sclateri RIDGW.

Sclater's Spotted-winged Flycatcher.

Amakahi.

A single specimen, marked as female; differs in no way from the other four previously received. The basal half of the lower mandible is waxy yellow, as in these, and the white on the tail likewise restricted, especially on the other webs, and suffused with tawny.

Measurements.

U. S. Nat. Mus. No.	Collector.	Sex and age.	Locality.	Wing.	Tail-feathers.	TARSUS.
116783	Knudsen ...	♀ ad.	Kauai, Hawaiian Islands.....	67	64	24

Chasiempis dolei STEJN.

Dole's Flycatcher.

Apekepeke.

Two specimens, male and female, agreeing in all essential points with the original specimens, thus confirming the validity of the species. No. 116784, the supposed male, differs slightly in the tinge of the tawny of the fore neck and chest, it being in this specimen more purplish and less yellowish, while the white wing markings are slightly suffused with the same color round their edges.

The material now before me shows plainly that the entirely black bill and the more extended and pure white on the tail-feathers are additional characters separating *Ch. dolei* from *Ch. sclateri*, inhabiting the same island.

A third specimen (No. 116782), also marked male, has even a stronger wash of tawny on the wing spots than the one mentioned above, and even the back and rump are suffused in the same way, but bill and tail are typical *Ch. dolei*. The differences may be due to age, although the specimen shows no indication of being immature. It should be remarked, however, that this specimen exhibits considerable abrasion of the wing-feathers, while the others are quite fresh. It is therefore

probably collected at a different season, which may account for the difference.

Measurements.

U. S. Nat. Mus. No.	Collector.	Sex and age.	Locality.	Wing.	Tail-feathers.	Exp. culmen.	Tarsus.
116784	Knudsen ...	♂ ad.	Kauai, Hawaiian Islands.....	69	66	11	24
116785	...do.....	♀ ad.	...do.....	70	68	.....	25
116782	...do.....	♂	...do.....	69	64	11	24

Phæornis myadestina STEJN.

Flycatching Thrush.

On.

The two specimens of this bird are very interesting, not only because they bear out the characters of the species, thus confirming its validity, but especially because both are young. No. 116786 agrees closely with one of the original specimens, which, at the time, I noted as immature (*l. c.*, p. 71), having the characteristic semilunar spot of buffy white bordered by a blackish fringe at the tip of the wing coverts. The other specimen is still younger. In this the feathers of the rump and the upper tail-coverts belong to the first plumage, having the buffy subapical spot and the black terminal fringe; moreover, all the feathers of the lower surface are margined terminally with grayish or blackish, giving those parts a scaly appearance; tertiaries and inner secondaries are margined apically with whitish. Placing this bird alongside a *Myadestes townsendi* in corresponding plumage, no one would doubt that the characteristic wing pattern, the peculiar structure of the bill, the booted tarsus, and the almost identical appearance of the young plumage are more than superficial similarities. In fact, were it not for the different proportions of wing, tail, and legs, the two birds could hardly be separated generically. It should also be borne in mind that the proportions vary greatly within the genus *Myadestes* itself, and that by selecting our species we can find some in which these proportions differ less from *Phæornis*, than do the most extreme species of *Myadestes* inter se, as will be seen from the following tables:

I. *Ratio between tail and wing.*

<i>Phæornis myadestina</i>	1 : 1.25
<i>Myadestes venezuelensis</i>	1 : 1.15
<i>Myadestes townsendi</i>	1 : 1.15
<i>Myadestes obscurus</i>	1 : 1.02

II. *Ratio between tarsus and wing.*

<i>Phæornis myadestina</i>	1 : 3.12
<i>Myadestes venezuelensis</i>	1 : 4.25
<i>Myadestes townsendi</i>	1 : 5.62
<i>Myadestes obscurus</i>	1 : 4.76

III. Ratio between tarsus and tail.

<i>Phœornis myadestina</i>	1 : 2.50
<i>Myadestes venezuelensis</i>	1 : 3.70
<i>Myadestes townsendi</i>	1 : 4.86
<i>Myadestes obscurus</i>	1 : 4.67

In the first table the difference between *Phœornis* and the nearest *Myadestes* is 0.10, that between the extreme species of *Myadestes* 0.13; in the second the same differences are 1.13 and 1.37, respectively; while in the third they are 1.20 and 1.16.

The other parts of the structure agree as well. The bill, with nostrils and bristles, is identical, though somewhat stouter and stronger in *Phœornis*; the wing-formula is the same in *Ph. myadestina* and *M. venezuelensis*; and the tail of these two species is likewise identical in shape. I am also unable to detect any difference in the structure of their feet.

I am now fully satisfied that the two genera are very closely allied, and shall include them both in the group *Myadestee* which I established several years ago (Proc. U. S. Nat. Mus., v, 1882, p. 482).

The relationship of *Phœornis* to *Myadestes* is of very great interest, as it is the only instance of a peculiar Hawaiian genus of Passerine birds being related to birds exclusively American in their present distribution.

Measurements.

U. S. Nat. Mus. No.	Collector.	Sex and age.	Locality.	Wing.	Tail-feathers.	Exp. culmen.	Tarsus.	Middle toe, with claw.
116786	Knudsen ...	♂ imm.	Kauai, Hawaiian Islands.....	99	78	.....	31	25
116787	.....do	♀ jun.	.....do	101	79	13	32	26

Hemignathus stejnegeri (WILS.).

Green Sickle bill.

Iwi.

The two *Hemignathus* sent this time differ very decidedly from those previously (Pr. U. S. Nat. Mus., 1887, p. 93) designated by me with doubt as *Hemignathus obscurus* (GMEL.) and afterwards described by Mr. Scott B. Wilson as *H. stejnegeri* (Ann. Mag. Nat. Hist., 6 ser., vol. iv, Nov., 1889, p. 400). In the first place they are larger; wing 88–89^{mm} against 76–82; chord of culmen 57–58^{mm} against 43–53. They are, moreover, much more brightly colored, having the entire upper surface bright yellow-olive (something between Ridgway's "olive green," Nomencl. Col., pl. x, fig. 13, and "wax-yellow," pl. vi, fig. 7), several shades brighter than the rump in those received before; the under surface from chin to breast, as well as the flanks of the same color, only somewhat lighter, shading into "canary yellow" (pl. vi, fig. 12) on the abdomen; lores, black; superciliary stripe, yellow; tibia, white. The birds of the

previous collection are olive *gray* on the back, the rump being distinctly yellowish olive, as are also the flanks; sides of head and neck are also grayish like the back, while the whole middle line from chin to anal region is pure yellow. According to Knudsen each collection contained a pair, but the difference seems much less likely to be one of age than of sex. There seems to be no good *a priori* reason against the assumption of the existence of two closely allied species of *Hemignathus* on Kauai, as the differences which I have pointed out above are but little less marked than those which separate *Himatione parva* from my so-called *H. chloris* (*nec* CAB.). For the present, however, I think it better to assume that the specimens have been erroneously sexed, and that the brighter and larger specimens are the males of the present species.

Measurements.

U. S. Nat. Mus. No.	Collector.	Sex and age.	Locality.	Wing.	Tail-feathers.	Cord of exp. culmen.	Distance between tips of mandibles.	Tarsus.	Middle toe, with claw.
116788	Knudsen ...	♂ ad.	Kauai, Hawaiian Islands....	88	51	58	6	27	25
116789	...do.....	♀ (!) ad.	do.....	89	53	57	6	26	25

Vestiaria coccinea (MERR.).

Olokele.

Two adults and two young birds of this species, the latter particularly interesting.

No. 116793 has not yet commenced to molt. It is of a dull ocher-yellow, brightest on fore neck and chest, duller and more olive on back, tips of feathers more or less distinctly bordered with black; almost the whole of the innermost tertial and the inner web and tip of the next one light gray, the first mentioned feather somewhat darker in the outer web; bill horny yellow, except culmen which is blackish; legs dark horny brown. No. 116792 is apparently a little older. Red feathers, mostly still in their sheaths, are protruding all over the body; the bill is reddish orange, dusky at base of upper mandible, and the legs have become a light yellowish brown; the tertials are colored as in the foregoing specimen. This point is well worth mentioning, as Sharpe (Cat. B. Brit. Mus., x, p. 7) describes a young female from Hilo, Island of Hawaii, as having the inner webs of the tertiaries white. It is quite possible that the young birds from the various islands show tangible differences which may become obliterated in the old ones as they assume the red plumage.

Oreomyza bairdi STEJN.

Akakane.

One specimen (No. 116795) agrees very closely with the types. It measures as follows: Wing, 69^{mm}; tail-feathers, 44^{mm}; exposed culmen, 12.5^{mm}; tarsus, 20^{mm}; middle toe, with claw, 16^{mm}; hind toe, without claw, 10^{mm}.

Besides this there is another *Oreomyza* which, in spite of its great resemblance to *O. bairdi*, I must regard as a distinct species. I propose to call it

Oreomyza wilsoni sp. nov.

Diagnosis.—Similar to *O. bairdi*, but with the forehead, supercilia, and ear-coverts white suffused with a delicate tinge of pale olive buff; under wing-coverts suffused with sulphur yellow; first primary (from edge of wing) equaling the seventh in length.

Dimensions (type specimen).—Wing, 69^{mm}; tail-feathers, 43^{mm}; exposed culmen, 12.5^{mm}; tarsus, 20^{mm}; middle toe, with claw, 16.5^{mm}; hind toe, without claw, 10^{mm}.

HABITAT.—Kauai, Hawaiian Islands.

Type.—U. S. Nat. Mus., No. 116794. V. Knudsen, collector.

The differences exhibited by this specimen are so many, and of such a character, that they can not be supposed to be due to sex, age, or season. In addition to those pointed out in the diagnosis, the type of this form (with which I wish to associate Mr. Scott B. Wilson's name, in recognition of his ornithological work in the Hawaiian Islands) is browner above, darker olive on the flanks, and less yellow on the chest than the three specimens of *O. bairdi* before me.

?*Psittirostra psittacea* (TEMML.).

Ou polapalapa.

The two specimens sent, both marked as males, agree closely with those previously recorded from Kauai (Proc. U. S. Nat. Mus., 1887, pp. 389-390), except that in No. 116797 fore neck and chest are distinctly gray, with hardly a tinge of greenish.

Moho braccata CASSIN.

Oo.

One specimen (No. 116800) agrees closely with those previously recorded (Proc. U. S. Nat. Mus., 1887, pp. 100-102). Three others differ somewhat from these in being larger and of deeper, more saturated colors, as well as by absence of light shaft streaks on the interscapulars. The latter may be either the males or the fully adult birds, the former representing females or immature birds. I am inclined to think, however, that the difference is due to sex and not to age.

Measurements.

U. S. Nat. Mus. No.	Collector.	Sex and age.	Locality.	Wing.	Tail-feathers.	Exp. culmen.	Tarsus.	Middle toe, with claw.
116800	Knudsen ...	.....	Kauai, Hawaiian Islands	94	81	.....	.....	.....
116798	.. do .....	.....	.....do	98	85	29	.....	.....
116799	.. do .....	.....	.....do	97	86	.....	.....	.....
116801	.. do .....	.....	.....do	101	88	28	.....	.....